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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,341

02/14/2006

Masahiko Kubota

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03/16/2010

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EXAMINER

RAYMOND, BRITTANY L

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/16/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,341	Applicant(s) KUBOTA ET AL.	
	Examiner BRITTANY RAYMOND	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,9,16 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,9,16 and 25-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/21/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 2, 4, 5, 9, 16 and 25-27 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6, 9 and 10 of U.S. Patent No. 6951380 in view of Ohkuma (U.S. Patent 6461798). Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions teach forming a first positive resist of a first material and sensitive to a first radiation on a substrate, forming a second positive resist of a second material and sensitive to a second radiation on the first resist, exposing the second resist to a second radiation, developing the second resist, exposing the first resist to a first radiation, and developing the first resist to form a mold pattern. Both inventions

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also teach forming a resin over the mold pattern, and removing the mold pattern to form a liquid discharge head. Since the materials of the first and second resists are flipped in U.S. Patent 6951380, the reference, Ohkuma, is combined to teach that a polymethyl isopropenyl ketone can be used as a first photoresist in an ink jet head manufacturing process.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 5, 9, 16 and 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubota (U.S. Patent Publication 2004/0070643) in view of Ohkuma (U.S. Patent 6461798).

Regarding claims 1, 2, 4, 5, 26 and 27, Kubota discloses a process of forming a structure comprising: coating a substrate with a first positive resist layer, baking the first positive resist layer, coating the first positive resist layer with a second positive resist layer comprising polymethyl isopropenyl ketone, baking the second positive resist layer, exposing the second resist to a second wavelength of light, developing the second resist, exposing the first resist to a first wavelength of light, and developing the first resist to form a convex pattern on the substrate (Paragraphs 0058-0063 and Figures 1A-1F). The process could easily be carried out by reversing the materials of the first and second resist by reversing the wavelength of light used for the first and second

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exposures. Kubota also discloses that the first resist layer can comprise a methacrylic copolymer composite including methacrylic acid, which has 2 to 30% methacrylic acid and a molecular weight of 5,000-50,000 (Paragraph 0053). It is inherent that an anhydride is formed by simply removing water from a chemical compound, often an acid. As to claims 4 and 5, Kubota teaches that after patterning the first and second resist layers, the patterned resists act as a mold, a resin is coated over the mold material, and then the mold material is dissolved and removed to form an ink channel (Paragraph 0050). Regarding claims 9, 16 and 25, Kubota teaches that the polymethyl isopropenyl ketone resist layer is sensitive to light with a wavelength in the range of 260 nm to 330 nm and that the methacrylic copolymer resist layer is sensitive to light with a wavelength in the range of 210 nm to 330 nm (Paragraph 0051).

Kubota fails to disclose that the polymethyl isopropenyl ketone resist is the first resist and that the methacrylic copolymer resist is the second resist.

Ohkuma discloses a process for the production of an ink jet head comprising: forming energy generating elements on a substrate, forming a photosensitive resin layer on the substrate, patterning the photosensitive resin layer through a patterning mask, forming a coating resin layer on the patterned photosensitive resin layer, and further processing the substrate (Col. 7, Lines 28-30 & 62-66; Col. 10, Line 51-Col. 11, Line 30). Ohkuma also discloses that the photosensitive resin layer can comprise polymethyl isopropenyl ketone and that the coating resin layer can comprise an acrylic resin (Col. 8, Lines 11-61 & Col. 11, Lines 20-30), as recited in claims 1, 2, 4 and 5 of the present invention.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have used the polymethyl isopropenyl ketone resist as the first resist in the process of Kubota, as suggested by Ohkuma, because Ohkuma teaches that this allows for an ink pathway to be efficiently formed with no deformation.

Response to Arguments

5. Applicant's amendments have overcome the objections to claims 4-7 and the rejections of claims 1-24 under 35 USC 112 2nd paragraph that were presented in the last Office Action. Examiner has withdrawn the objections and the rejections.

6. Applicant's arguments, filed 11/5/2009, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a newly found prior art reference.

Applicants argue that it would not have been obvious to reverse the layers of Kubota to form the polymethyl isopropenyl ketone layer first and the methacrylic layer second because the data provided in the present application demonstrates that forming the layers in this order provides unexpectedly superior results. Kubota is still relied upon to teach the process of forming a first photosensitive layer on a substrate, forming a second photosensitive layer on the first layer, exposing and developing part of the second layer, and exposing and developing part of the first layer. The reference, Ohkuma, is combined with Kubota to teach that a polymethyl isopropenyl ketone layer can be used as a first photosensitive layer in the process of forming an ink jet head and that a second acrylic resin layer can be formed and patterned above the polymethyl

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isopropenyl ketone layer. It would have been obvious to one of ordinary skill in the art that the first and second photosensitive layers of Kubota could be switched, as suggested by Ohkuma, because Ohkuma teaches that forming the layers in this order allows for an ink pathway to be formed efficiently and without deformation.

The obviousness double patenting rejection still stands, but is now over U.S. Patent 6951380 in view of Ohkuma for the same reasons as discussed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY RAYMOND whose telephone number is (571)272-6545. The examiner can normally be reached on Monday through Friday, 9:00 a.m. - 5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Kathleen Duda/
Primary Examiner, Art Unit 1795**

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